A DOCPHOENIX

Office Action Summary	Application No.	Applicant(s)	
	09/492,213	GUNDLING ET AL.	
	Examiner	Art Unit	
	Bradley L. Sisson	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 January 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4,7,8 and 12-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4,7,8 and 12-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 January 2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Location of Application

1. The location of the subject application has changed. The subject application is now located in Group 1630, Art Unit 1634.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 24 January 2002 has been entered.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1, 4, and 7, 8, and 12-16 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Factors to be considered in determining whether a disclosure would

require undue experimentation have been summarized in *In re Wands*, 8 USPQ2d 1400 (CAFC 1988). They include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.

The Quantity of Experimentation Necessary and The Amount of Direction or Guidance Provided

The quantity of experimentation required to enable a skilled artisan to practice the full scope of the claimed invention is immense. As amended, the claims more clearly recite that one is to render incapable of use in any amplification reaction, the presence of carry-over or contaminating nucleic acids through the application of an electric current of undefined duration and strength. Claims 2, 5, and 9 have been interpreted as encompassing the separation of any binding pair, be it hormones and their receptors, antibodies and antigens, as well as complementary nucleic acid sequences.

The specification does not provide any examples.

The specification does, however, provide motivation for others to determine how the claimed invention is to be practiced. In support of this position, attention is directed to page 57, lines 4-10, where it is stated:

> It is believed that that signal may elute or lyse a nucleic acid. Alternatively, that signal may attenuate, change or otherwise effect biological and/or bio-molecular elements, such as a nucleic acid and the like, in the fluid 95 such that those elements have a reduced ability to be amplified or detected in a PCR reaction.

While it is not a requirement that applicant set forth each and every possible set of conditions that could be envisioned so as to satisfy the requirements for enablement under 35

USC 112, first paragraph, the specification must set forth at least some of those conditions as it is now well settled that to not disclose the starting materials and the reaction conditions to be used in practicing the claimed invention unfairly shifts the burden of enablement from that of applicant to the public. The situation at hand is analogous to that in *Genentech v. Novo Nordisk A/S* 42 USPQ2d 1001. As set forth in the decision of the Court:

> " '[T]o be enabling, the specification of a patent must teach those skilled in the art how to make and use the full scope of the claimed invention without undue experimentation.' *In re Wright* 999 F.2d 1557, 1561, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993); *see also Amgen Inc. v. Chugai Pharms. Co.*, 927 F. 2d 1200, 1212, 18 USPQ2d 1016, 1026 (Fed Cir. 1991); *In re Fisher*, 427 F. 2d 833, 166 USPQ 18, 24 (CCPA 1970) ('[T]he scope of the claims must bear a reasonable correlation to the scope of enablement provided by the specification to persons of ordinary skill in the art.').
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> *****
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> "Patent protection is granted in return for an enabling disclosure of an invention, not for vague intimations of general ideas that may or may not be workable. *See Brenner v. Manson*, 383 U.S. 519, 536, 148 USPQ 689, 696 (1966) (starting, in context of the utility requirement, that 'a patent is not a hunting license. It is not a reward for the search, but compensation for its successful conclusion.') Tossing out the mere germ of an idea does not constitute enabling disclosure. While every aspect of a generic claim certainly need not have been carried out by an inventor, or exemplified in the specification, reasonable detail must be provided in order to enable members of the public to understand and carry out the invention.
> "It is true . . . that a specification need not disclose what is well known in the art. *See, e.g., Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1385, 231 USPQ 81, 94 (Fed. Cir. 1986). However, that general, oft-repeated statement is merely a rule of supplementation, not a substitute for a basic enabling disclosure. It means that the omission of minor details does not cause a specification to fail to meet the enablement requirement. However, when there is no disclosure of any specific starting material or any of the conditions under which a process can be carried out, undue experimentation is required; there is a failure to meet the enablement requirement that cannot be rectified by asserting that all the disclosure related to the process is within the skill of the art. It is the specification, not the knowledge of one skill in the art, that must supply the novel aspects of an invention in order to constitute adequate enablement. This specification provides only a starting point, a direction for further research.

The Presence or Absence of Working Examples

The specification provides no working examples.

The Nature of the Invention

The invention relates to the world of biochemistry and electrical conductance. More specifically, the invention relates to the separation of any type of biological material from any type of ligand in any type of environment.

The State of the Prior Art

The aspect of contaminants in various nucleic acid amplification assays is well known in the art as is the effect of contaminants in nucleic acid amplification assays have been approached through the use of chemicals such as uracil-N-glycosylase (UDG; US Patent 5,536,649) as well as the encasement of PCR reactants in a wax matrix (US Patent 5,576,197). The state of the prior art is wholly undeveloped as it relates to the application of electric currents to various samples in an effort to reduce or eliminate any contaminating material, e.g., nucleic acids, as well as any other ligand and its receptor(s).

The Relative Skill of Those in the Art

The relative skill of those in the art most closely associated with the claimed invention is high, on par with those that hold a Ph.D. in biochemistry.

The predictability or unpredictability of the art

The predictability of the art is low as it deals with matters of chemistry and cellular physiology- two art areas that have been recognized by the court as being notoriously unpredictable.[1]

The breadth of the claims

Claims 1, 4, 7, 12, and 13 have sufficient breadth of scope so to encompass the binding of a first target nucleic acid when the first target nucleic acid is the subject of an amplification reaction. While agreement is reached in that the first nucleic acid could possibly contaminate an amplification reaction used to amplify a second nucleic acid target, the method makes no distinction between a first nucleic acid sample that is to be amplified and one attempting to amplify a second nucleic acid.

Additionally, the method of claim 1, for example, does not require that the electrical current be continued during any amplification reaction. Seemingly, the termination of the electrical current would result in the liberation of any freed first nucleic acid sample such that it could be amplified in the second reaction. Conversely, if the electrical current was allowed to remain on, it stands to reason that the current that served to immobilize the first nucleic cid would also serve to immobilize the second nucleic acid.

In the case of claim 12 it is required that a current be passed, though not terminated at any point, whereby a potentially contaminating first nucleic acid is fragmented by the application

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[1] As noted in *In re Fisher* 166 USPQ 18 (CCPA, 1970):

In cases involving predictable factors, such as that, once imagined, other embodiments can be made without difficulty and their performance characteristics predicted by resort to known scientific laws. In cases involving

of an electrical current. The level of fragmentation is not clearly defined. As presently worded, it stands to reason that the fragmentation of a previously intact nucleic cid target into that of oligonucleotides could very easily result in the generation of a plethora of unintended primers that could in term amplify unintended regions of the second nucleic cid sample, thereby giving the impression of contamination or at the very least, non-specific amplification whereby a multitude of amplicons of varying sizes and sequences could be synthesized.

Claim 14 requires that the target nucleic acid be immobilized to a solid support, e.g., a microparticle, and that it is subjected to an electrical field of sufficient magnitude that it will be "eluted" from the particle. The specification does not fully enable this aspect of the invention. While one may well apply an electrical field so to cause the nucleic acid present therein to migrate toward one of the terminals, the particle is not required to be of any particular size and as such, the use of certain particles may well result in the co-migration of the tethered nucleic acid complex, not the "elution" of the nucleic acid from such a particle.

For the above reasons, and in the absence of convincing evidence to the contrary, the rejection is maintained.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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unpredictable factors, such as most chemical reactions and physiological activity, the scope of enablement obviously varies inversely with the degree of unpredictability of the factors involved.

6. Claims 1, 4, 7, 8, and 12-16 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Claim 1 recites the limitation "the waste portion" in step (d). There is insufficient antecedent basis for this limitation in the claim. Claims 7 and 8, which depend from claim 1, fail to overcome this issue and are similarly rejected.

8. Claim 4 recites the limitation "the contaminating nucleic acid" in step (b). There is insufficient antecedent basis for this limitation in the claim.

9. Claim 8 recites the limitation "the first nucleic acid complex" in step (a1)(i). There is insufficient antecedent basis for this limitation in the claim.

10. Claim 14 recites the limitation "the bound particle" in step (c). There is insufficient antecedent basis for this limitation in the claim. Claims 15-16, which depend from said claim, fail to overcome this issue and are similarly rejected.

11. Claim 8 is confusing as to how there is a reduction in unwanted amplification when the portion of the nucleic acid that is being fragmented is that which has already been discarded and is already not a part of the sample to undergo amplification.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bradley L. Sisson whose telephone number is (703) 308-3978. The examiner can normally be reached on 6:30 a.m. to 5 p.m., Monday through Thursday.

13. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, W. Gary Jones can be reached on (703) 308-1152. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9307 for After Final communications.

14. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

B. L. Sisson

Bradley L. Sisson
Primary Examiner
Art Unit 1634

bls
April 8, 2002